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SB 610 Water Supply Assessment

CUE VI LLC Proposed Marina Center Development Eureka, California

Prepared for:

City of Eureka

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SB 610 Water Supply Assessment Summary

Project: CUE VI LLC Marina Center Development, Eureka, California

The following determination has been made regarding the above-referenced project:

The total water supplies available to the City during normal, single-dry and multiple-dry water years within a 20-year projection will meet the projected water demand under the project in addition to the demand of existing and other planned future uses, including, but not limited to, agricultural uses.

The foregoing determination is based on the following water supply assessment information and supporting information from the 2005 Urban Water Management Plans prepared by the City of Eureka and the Humboldt Bay Municipal Water District.

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Abbreviations and Acronyms

AF	Acre-Foot
AF/D	Acre-Feet per Day
AF/Y	Acre-Foot per Year
GPD	Gallons Per Day
SF	Square Foot
CEQA	California Environmental Quality Act
City	City of Eureka
DHS	Department of Health Services
District	Humboldt Bay Municipal Water District
HCSD	Humboldt Community Services District
MGD	Million Gallons per Day
NR	No Reference
SWRCB	State Water Resources Control Board
TRF	Turbidity Reduction Facility
UWMP	Urban Water Management Plan

1.0 Introduction

The CUE VI LLC Marina Center Project (Project) includes development of a mixed-use office, retail, industrial, and multi-family residential center located on approximately 40 acres in the City of Eureka, California.

In consideration of the proposed Project, the City of Eureka (City) is conducting an environmental review under the requirements of the California Environmental Quality Act (CEQA). The environmental review includes providing an assessment of water supply adequacy for the proposed Project.

The California Water Code (Water Code) Sections 10910 through 10915 were amended by the enactment of Senate Bill 610 (SB 610) in 2002. SB 610 requires an assessment of whether available water supplies are sufficient to serve the demand generated by the Project, as well as the reasonably foreseeable cumulative demand in the region over the next 20 years under average normal year, single dry year and multiple dry year conditions.

This report provides information with regard to an assessment of the available water supply to serve the proposed Project, based on the sections of the Water Code amended by SB 610. This assessment builds on two previous water supply studies completed by the City and by the wholesale water supplier for the City, the Humboldt Bay Municipal Water District (District), including:

- the City's 2005 Urban Water Management Plan (City's 2005 UWMP); and
- the District's 2005 Urban Water Management Plan (District's 2005 UWMP).

The City's Public Works Director, Michael Knight, was contacted regarding whether a current water system master plan was available for the City. It was noted that there is not a current water system master plan for the City's water system, since the City has been built-out for approximately 50 years, and the demands have had little change. There is a model of the water transmission pipelines, reservoirs, and pump stations, which is being updated as the City replaces sections of the Mad River Pipeline. It was noted that this model is useful in determining overall water demands to the water transmission and storage system, but does not include any distribution piping (Michael Knight, City of Eureka Public Works Director, personal communication, April 2006).

2.0 Project Description

2.1 Project Location

The proposed Project will be located on the site commonly known as the "Balloon Track." The Balloon Track is an abandoned rail yard near the historic downtown commercial core area of the City. CUE VI LLC currently owns this property. The site has been cleared of almost all rails, the rail car roundhouse, and other facilities.

The Project site encompasses an approximate 40-acre parcel located along Humboldt Bay that consists of Assessor's Parcel Numbers 003-021-009, 003-031-006, 003-041-007, 003-031-007, 003-031-

003, 003-031-013, 003-031-012, 003-041-005, 003-041-006 and 003-051-001. Waterfront Drive borders the property to the north and the west. The site is bordered to the south by properties located on Washington Street, and to the east by properties that are adjacent to Broadway Avenue. Clark Slough borders the site on the southwest at Waterfront Drive, before connecting with Humboldt Bay. The primary uses of land in this area are light industrial and commercial.

2.2 Project Land Use Summary

The approximate 40-acre project site currently consists of vacant, inactive, open space. CUE VI LLC has submitted a zoning change application to the City for a proposed mixed-use development of the Project site. For purposes of this assessment, the information presented in the site concept figure dated August 29, 2006, (Baysinger Partners, 2006) was used to develop the project land use summary.

The proposed Project will include a mixture of multi-family residential units; over 10 acres of business, commercial, and industrial uses; restaurants; a museum; and open space areas including wetland restoration and conservation areas. A summary of the proposed land uses, the total building areas for each proposed land use, and the estimated water demand based on the proposed land uses, is presented in Table 1.

Table 1 Summary of Proposed Project Land Uses¹ and Estimated Water Demand SB 610 Water Supply Assessment CUE VI LLC Marina Center Development, Eureka, California			
Proposed Project Land Use	Building Area (SF ²)	Estimated Water Demand ³	
		GPD ⁴	AF/Y ⁵
Retail/Service	285,500	71,375	80
Nurseries/Garden/Furniture	28,000	7,000	8
Office	104,000	26,000	29
Restaurants	14,000	3,500	4
Multi Family	72,000	18,000	20
Museum	12,500	3,125	3
Industrial	70,000	17,500	20
Total	586,000	146,500	164
1. Based on CUE VI LLC Marina Center Site Concept Figure Dated 8.29.06 (Baysinger Partners, 2006) 2. SF: square feet 3. Estimated water demand based on demand factor of 250 GPD/1,000 SF building area, City of Eureka, Viessman 1993, Dewberry & Davis 1996 4. GPD: gallons per day 5. AF/Y: acre-feet per year			

Two methods were compared for estimating the water demand for the proposed Project and both methods provided similar results. The first method utilized a demand factor of 250 Gallons Per

Day (GPD) per 1,000 Square Feet (SF) of the proposed building area, as shown in Table 1. This method calculated an estimated water demand of 164 Acre-Feet per Year (AF/Y) for the proposed project.

The second method utilized a demand factor of 100 GPD per person for the proposed Project. For an estimated employee base of approximately 1,246 people and an estimated residential base of approximately 135 people, the water demand was calculated to be approximately 155 AF/Y.

2.3 Infrastructure & Conveyance

The proposed Project may necessitate the construction of additional water distribution infrastructure within the project area, to serve the proposed residential, commercial, business, and industrial uses. To implement these infrastructure improvements, the project applicants will need to work with the City to upgrade and/or develop the necessary transmission and distribution lines to serve the project for domestic water services, as well as fire protection services. New water facilities incorporated into the site development may include new storage facilities, pumps, pumping stations, and/or transmission mains. The assessment assumes the District's existing conveyance facilities for delivering water to the City have sufficient capacity to accommodate all of the City's demands, including the demands allotted to the City through the City's vested water rights, up to and including 6,499 AF/Y, through the 20-year planning period. Further review of the necessary water system conveyance and infrastructure improvement modifications required for servicing the proposed Project is not addressed as part of this water supply assessment.

3.0 Public Water System Information

The City owns and operates the public water supply system that services municipal water users within the existing City limits. The City's water supply system currently supplies approximately 9,600 direct customers, and the Humboldt Community Services District (HCSD). The City's incorporated limits include approximately 17.7 square miles of land. The proposed Project site is located within the City's incorporated limits and will be serviced by the City's public water supply system.

4.0 Water Supply Planning Under SB 610

SB 610 was passed in 2002 and amended Sections 10910 through 10915 of the Water Code by requiring a water supply assessment be completed for all development projects subject to CEQA. SB 610 also amended Section 10631 of the Water Code, which relates to Urban Water Management Plans (UWMPs). The water supply assessment process under SB 610 is designed to rely on the information typically contained in UWMPs, and involves answering the following questions related to a proposed Project:

1. Is the proposed project subject to CEQA?
2. Is the proposed project a "Project" under SB 610?
3. Is there a public water system that will service the proposed project?
4. Is there a current UWMP that accounts for the project demand?
5. Is groundwater a component of the supplies for the project?
6. Are there sufficient supplies to serve the project over the next twenty years?

The following sections address the SB 610 water supply assessment questions as they relate to the proposed CUE VI LLC Marina Center Development. As noted previously, this assessment builds on the 2005 UWMPs completed for the City and for the District, respectively.

4.1 Is the Proposed Project Subject to CEQA?

The first step in the SB 610 process is to determine whether the proposed project is subject to CEQA. Water Code Section 10910(a) states that any city or county that determines that a project, as defined in Section 10912, is subject to CEQA, shall prepare a water supply assessment for the project. CEQA applies to projects requiring an issuance of a permit by a public agency, projects undertaken by a public agency, or projects funded by a public agency. This project requires an issuance of permits by a public agency and is, therefore, subject to CEQA.

4.2 Is the Proposed Project a “Project” Under SB 610?

The second step in the SB 610 process is to determine if the proposed project meets the definition of “Project” under Water Code Section 10912(a). Under Section 10912(a) a “Project” is defined as meeting any of the following criteria:

1. a proposed residential development of more than 500 dwelling units;
2. a proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space;
3. a proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space;
4. a proposed hotel or motel, or both, having more than 500 rooms;
5. a proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area;
6. a mixed-use project that includes one or more of the projects defined above; or
7. a project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

Alternately, if a public water supply has less than 5,000 service connections, the definition of a “Project” also includes any proposed residential, business, commercial, hotel or motel, or industrial development that would account for an increase of 10 percent or more in the number of the public water system’s existing service connections, or a mixed-use project that would demand an amount of water equivalent to, or greater than, the amount of water required by residential development that would represent an increase of 10 percent or more in the number of public water system’s existing service connections.

In the economic assessment for the proposed Marina Center development, it was noted that the proposed Project would support approximately 1,246 jobs on site, based on standard employment ratios. Additionally, the project is a mixed-use development that includes commercial, industrial,

and other business establishments that cumulatively have more than 500,000 square feet (SF) of floor space proposed. Therefore, the proposed Marina Center development qualifies as a “Project” under Section 10912(a) of the Water Code.

4.3 Is There a Public Water System That Will Service the Proposed Project?

The third step in the SB 610 process involves determining if there is a public water system to serve the Project. Section 10912(c) of the Water Code identifies a public water supply system as a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections. The City has determined that the City’s public water supply system will be used to supply the project. A wholesale water supplier, the District, supplies the City’s public water supply system.

4.4 Is There a Current Urban Water Management Plan That Accounts for the Project Demand?

The fourth step in the SB 610 process involves determining if there is a current UWMP that considers the projected water demand for the project area. The Water Code requires that all public water systems providing water for municipal purposes to more than 3,000 customers, or supplying more than 3,000 acre feet per annum, must prepare an UWMP, and that this plan must be updated at least every 5 years.

Section 10912(c)(2) of the Water Code states:

If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g).

The City’s current UWMP was adopted in 2005. The City purchases water from the District, and the District’s current UWMP was also adopted in 2005. The proposed project demand was not specifically accounted for in either of the UWMPs; however, both UWMPs demonstrated an abundant supply of water available through a 20-year planning period ending in 2030. This assessment relies on and summarizes the information contained in both the City’s and the District’s 2005 UWMPs.

4.5 Is Groundwater a Component of the Supplies for the Project?

The next step in the assessment process is to address the requirements of Water Code Section 10910(f), paragraphs 1 through 5, which apply if groundwater is a source of supply for the proposed project. With respect to the state drinking water requirements, the Department of Health Services (DHS) has classified the District’s source on the Mad River as groundwater and, therefore, the source would be subject to Water Code Section 10910(f) paragraphs 1 through 5.

Section 10910(f)(1) requires a review of any information contained in the UWMP that is relevant to the identified water supply for the proposed project. The District's 2005 UWMP notes that the District is in the process of conducting a groundwater study of the aquifer in the Essex Reach of the Mad River, in the vicinity of the four Ranney wells.

Section 10910(f)(2) requires a description of any groundwater basin or basins from which the proposed project will be supplied. According to the District's 2005 UWMP, the site under study is the Mad River groundwater basin, which is located in the North Coast Hydrologic Region. It is composed of the Mad River Lowland Subbasin (Basin #1-8.01) and the Dows Prairie Subbasin (#1-8.02), as defined by the Department of Water Resources (DWR). The District's 2005 UWMP notes that currently the District is not required to obtain groundwater-pumping rights for the underlying groundwater basin, since the basin is not adjudicated.

Section 10910(f)(3) requires a detailed description and analysis of the amount and location of groundwater pumped by the public water system, or by the city or county, if either is required to comply with this part, pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. Table 2 shows the amount of groundwater pumped by the District from 2000 through 2004.

Table 2 District Historic Groundwater Pumping Rates, 2000-2004 SB 610 Water Supply Assessment CUE VI LLC Marina Center Development, Eureka, California					
	2000	2001	2002	2003	2004
Groundwater Pumped ¹ (AF/Y) ²	12,145	11,635	12,253	11,292	11,477
% Domestic Water Supply ³	52%	50%	52%	48%	49%
% Total Water Supply ⁴	14%	14%	15%	13%	14%
1. Source: District's 2005 UWMP, Table 6, Page 11 2. AF/Y: acre-feet per year 3. % Domestic water supply based on a domestic water system capacity of 23,500 AF/Y 4. % Total water supply based on the total water rights allocation of 84,000 AF/Y					

Section 10910(f)(4) requires a detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county, if either is required to comply with this part, pursuant to subdivision (b), from any groundwater basin from which the proposed project will be supplied. Table 3 shows the projected amount of groundwater to be pumped by the District from 2010 through 2030.

Table 3 District Projected Groundwater Pumping Rates, 2010-2030 SB 610 Water Supply Assessment CUE VI LLC Marina Center Development, Eureka, California					
	2010	2015	2020	2025	2030
Projected Groundwater Demand ¹ (AF/Y) ²	12,433	13,278	14,194	15,183	16,259
% Domestic Water Supply ³	53%	57%	60%	65%	69%
% Total Water Supply ⁴	15%	16%	17%	18%	19%
1. Source: District's 2005 UWMP, Table 7, Page 11 2. AF/Y: acre-feet per year 3. % Domestic water supply based on a domestic water system capacity of 23,500 AF/Y 4. % Total water supply based on the total water rights allocation of 84,000 AF/Y					

Section 10910(f)(5) requires an analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project. According to the District's 2005 UWMP, there is no present or anticipated overdraft in the underlying groundwater basin.

4.6 Are There Sufficient Supplies to Serve the Project Over the Next Twenty Years?

The last step in the water supply assessment process is to prepare the assessment of the available water supplies, including the availability of those supplies during varying water-year conditions, over a 20-year planning horizon, and also to provide an assessment of how these supplies relate to project-specific and cumulative demands over that same 20-year period. In this case, that period will cover the years 2010 through 2030.

Section 10910(c)(4) states:

If the city or county is required to comply with this part pursuant to subdivision (b), the water assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and future planned uses, including agricultural and manufacturing uses.

The following sections provide the additional information required to complete the water supply assessment. These sections include discussion of the existing public water system, the historical and projected water supplies, the historical and projected water demand, comparison of the projected water supplies and demands, and the findings of the assessment. The assessment

demonstrates that the City's water supplies will be sufficient to meet the projected water demand associated with the proposed project, in addition to the existing and future planned uses, during varying year conditions, for a 20-year projection.

5.0 Existing Water Sources and Water Rights

The City currently purchases water supplies for domestic use from the District. The District's source of water is the Mad River. According to the District's 2005 UWMP, the District currently has water rights to divert 75 Million Gallons Per Day (MGD) from the Mad River. This totals 84,000 AF/Y, which represents 8.4% of the average annual runoff of the Mad River Basin. The District also owns and operates the R.W. Matthews Dam, which impounds water in Ruth Lake. Flows below the R.W. Matthews Dam must be sufficient to provide for other water rights on the river, which total 1,775 AF/Y. Under an agreement with the California Department of Fish and Game, the District is also responsible for maintaining sufficient flows in the Mad River for fish and wildlife, at a potential maximum flow rate of 46,000 AF/Y.

The combined total of the District's water rights, other water rights, and maximum flows required for fish and wildlife is equal to approximately 131,775 AF/Y or approximately 13% of the average annual runoff for the watershed. The District's management of R.W. Matthews Dam ensures that these flows are available year round.

According to the District's 2005 UWMP, the District has the appropriate water rights permits from the State Water Resources Control Board (SWRCB) through the year 2029 (the time span for the 2005 UWMP) for surface water storage and diversion from the Mad River. Diversion from the river is accomplished in different ways for different uses. For industrial customers, surface water is diverted directly from the Mad River. For municipal customers, four Ranney wells pump water from the underlying groundwater aquifer that is then recharged by surface water from the Mad River.

The City of Eureka also maintains individual water rights to the Mad River equivalent to 6,499 AF/Y or 5.8 MGD. Under agreement between the District and the City, the deliveries from the District to the City are considered to be deliveries of the City's water, emanating from its own water rights not those of the District's. Deliveries in excess of the City's water rights are considered deliveries of the District's water.

6.0 Existing Water Quality

In the District's 2005 UWMP, it was noted the district has a very reliable source and supply of high quality water and the District does not expect water quality to affect its water management strategies or its supply reliability. With respect to the state drinking water requirements, the Department of Health Services (DHS) has classified the District's source as groundwater and, therefore, not subject to surface water treatment regulations. The District however, has designed and constructed a Turbidity Reduction Facility (TRF) to address wintertime turbidity issues and to meet turbidity standards established by the DHS during and following severe winter storms. The TRF design capacity is 14 MGD in the wintertime and 21 MGD in the summertime. The TRF is currently operated during the winter storm season to meet the DHS standards for turbidity.

7.0 Historical and Projected Water Supplies

The District's supplies are determined by its water rights and, therefore, the projected supply for the District is equal to 84,000 AF/Y for the 20 year planning horizon. Since the City acquires its water from the District on the City's vested water rights, the projected supply available for the City is equal to 6,499 AF/Y for the 20-year planning horizon.

7.1 Water Supply Reliability

As noted above, the District has water rights to 84,000 AF/Y from the Mad River, which amounts to 8.4% of the average annual runoff in the watershed. According to the District's 2005 UWMP, other user water rights and required flows for fish and wildlife amount to less than 5% of the average annual runoff in the watershed.

The District's 2005 UWMP provides a review of the water supply reliability for the Mad River and also references a historical perspective that addresses the determination of the safe yield of water from Ruth Lake. It was noted that, on average, Ruth Lake begins the water year with 31,000 Acre-Feet (AF) of water, equivalent to 64% of the 48,000-AF capacity. Most rainfall in the area occurs between November and April and, in most years, at least one major storm event will fill the reservoir to capacity. The water year from 1976 to 1977 was the only year in which the reservoir was not filled to capacity.

The District's 2005 UWMP provided an analysis of the water supply reliability during a normal water year, a single dry water year, and multiple dry water years. The normal year period of record was from 1963/64 through 2003/04, the single dry year was based on data from 1976/77, and the multiple dry year period was from 1989/90 through 1991/92. Table 4 presents the Mad River water supply reliability data provided in the District's 2005 UWMP.

Table 4 Mad River Water Supply Reliability Summary¹ SB 610 Water Supply Assessment CUE VI LLC Marina Center Development, Eureka, California					
	Normal Water Year	Single Dry Water Year	Multiple Dry Water Year 1	Multiple Dry Water Year 2	Multiple Dry Water Year 3
Average Annual Runoff (AF)²	1,002,000	165,000	571,800	371,300	283,500
% Normal Water Year	100%	16%	57%	37%	28%
1. Source: District's 2005 UWMP, Table 8, Page 11 2. AF: Acre-Feet					

As noted previously, the combined total of the District's water rights, other water rights, and flows required for fish and wildlife in the Mad River is equal to approximately 131,775 AF/Y or approximately 13% of the average annual runoff for the watershed. Under the single dry water

year condition, the anticipated supply available from the Mad River is equal to approximately 16% of the average annual runoff in the watershed, suggesting the District would still be able to provide sufficient supply, even under the most limiting single dry year condition.

7.2 Water Shortage Expectations

The District manages the R.W. Matthews Dam to ensure that flows are available in the Mad River year round. Overall it was noted the District has an abundant supply of water to fully meet the regional demand for water and it appears the existing water supply is sufficient for normal year, single dry year, and multiple dry year conditions.

In the event of drought conditions, the District has developed a water shortage contingency plan that provides a five-stage rationing system based on the percent capacity of the Ruth Lake storage reservoir. The City has also developed a water shortage contingency plan in the City's 2005 UWMP that is based on the District's five-stage rationing system.

8.0 Historical and Projected Water Demand

8.1 Historic Water Demand

The District currently has long-term wholesale contracts in place to provide treated water for domestic use to seven municipalities, including the City. Currently, the District delivers an average of 11 MGD (12,000 AF/Y) of treated water to its wholesale and retail customers. The domestic water system has a capacity of 21 MGD (23,500 AF/Y), and it was noted that peak daily demand in the summertime reaches 16 to 17 MGD. Table 2 provides a summary of the District's historic demand for domestic water supply during the years 2000 through 2004. Based on review of the historic domestic water demand data, it appears the District delivers on average approximately 50% of the available water from the domestic water supply system, which accounts for approximately 14% of the total water supply available.

Historic water demand for the City was provided in the City's 2005 UWMP for the years 1989 through 2000. Table 5 shows a summary of the average water delivered by the City from 1989-2000, and the percent of water delivered compared to the total water rights available for the City.

Table 5 City of Eureka Average Water Delivered by the City, 1989-2000 SB 610 Water Supply Assessment CUE VI LLC Marina Center Development, Eureka, California			
Year	Average Water Demand¹ (AF/D²)	Average Water Demand (AF/Y³)	% Total Supply Delivered⁴
1989	12.3	4,490	69%
1990	11.2	4,088	63%
1991	10.5	3,833	59%
1992	11.3	4,125	63%
1993	11.7	4,271	66%
1994	10.8	3,942	61%
1995	11.2	4,088	63%
1996	11.6	4,234	65%
1997	11.8	4,307	66%
1998	10.8	3,942	61%
1999	10.9	3,979	61%
2000	11.3	4,125	63%
Average	11.3	4,118	63%
1. Source: City's 2005 UWMP, Table 4, Page 6		4. % Total supply delivered based on City's vested water rights equal to 6,499 AF/Y.	
2. AF/D: Acre-Feet per Day			
3. AF/Y: Acre-Feet per Year			

Based on review of the historic water delivery data, it appears the City currently delivers between 60 to 70% of the total water supply available to the City, based on the City's vested water rights.

8.2 Projected Water Demands

The District's projected water demands included the projected needs of the District's four municipal customers who were also responsible for preparing UWMPs. These customers include the City of Arcata, the City of Eureka, the HCSD, and the McKinleyville CSD. The assumed annual usage growth rate applied for the City of Eureka was 1%. The City's 2005 UWMP notes that slow growth is not unexpected in the city, owing to the fact that the city limits are surrounded on three sides by lands developed to urban densities and already supplied with full urban services. Table 6 summarizes the population projections for the City of Eureka through 2030.

Table 6 Current and Projected Population in the Eureka Service Area SB 610 Water Supply Assessment CUE VI LLC Marina Center Development, Eureka, California							
	2000	2005	2010	2015	2020	2025	2030
Population¹	26,128	27,461	28,862	30,334	31,880	33,506	35,215
1. Source: City's 2005 UWMP, Table 2, Page 2							

The District's 2005 UWMP notes that the HCSD is able to purchase its water directly from the District and/or from the City, which purchases its water directly from the District. The projections included in the District's 2005 UWMP reflect the HCSD purchasing all its wholesale water directly from the District and it was noted the City projections were adjusted accordingly. Table 7 summarizes the total water use projected for the District and for the City through 2030.

Table 7 City and District Projected Water Demands, 2010-2030 SB 610 Water Supply Assessment CUE VI LLC Marina Center Development, Eureka, California						
		2010	2015	2020	2025	2030
District	Projected Use – Industrial (AF/Y)¹	16,808	16,808	16,808	16,808	16,808
	Projected Use – Domestic (AF/Y)²	12,433	13,278	14,194	15,183	16,259
	Projected Use – Total (AF/Y)³	29,241	30,086	31,002	31,991	33,067
City	Projected Use – Total (AF/Y)⁴	3,971	4,174	4,387	4,611	4,847
1. Source: District's 2005 UWMP, Table 14, Page 15 2. Source: District's 2005 UWMP, Tables 12 and 13, Page 15 3. Source: District's 2005 UWMP, Table 15, Page 15 4. Source: City's 2005 UWMP, Table 5, Page 6						

9.0 Comparison of Projected Water Supplies And Demands

9.1 District's Projected Supply and Demand Comparison

The District's 2005 UWMP shows that the water supply available during normal year, single dry year, and multiple dry year conditions is equal to 100% of the normal year water supply. The normal year water supply is determined by the District's water rights, which are equal to 84,000 AF/Y. Therefore, the projected supply for the District is equal to 84,000 AF/Y for the 20-year planning horizon, under all water year conditions. Table 8 shows the projected supply and demand comparisons for the District based on the full water rights allocation.

Table 8 District's Projected Supply and Demand Comparison¹ SB 610 Water Supply Assessment CUE VI LLC Marina Center Development, Eureka, California					
	2010	2015	2020	2025	2030
Supply Totals (AF/Y) ²	84,000	84,000	84,000	84,000	84,000
Demand Totals (AF/Y)	29,241	30,086	31,002	31,991	33,067
Difference (Supply Minus Demand)	54,759	53,914	52,998	52,009	50,933
Difference (As % of Supply)	65%	64%	63%	62%	61%
Difference (As % of Demand)	187%	179%	171%	163%	154%
1. Source: District's 2005 UWMP, Table 42, Page 25 2. AF/Y: acre-feet per year					

Because the District's total water rights account for industrial surface water and domestic groundwater withdrawals, the projected supply and demand comparison was also conducted based on the District's domestic water supply capacity, which is equal to 23,500 AF/Y. Table 9 shows a projected supply and demand comparison for the District based on the domestic water supply capacity.

Table 9 District's Projected Supply and Demand Comparison For Domestic Water Supply SB 610 Water Supply Assessment CUE VI LLC Marina Center Development, Eureka, California					
	2010	2015	2020	2025	2030
Domestic Water System Capacity ¹ (AF/Y) ²	23,500	23,500	23,500	23,500	23,500
Wholesale and Retail Demand Totals ³	12,433	13,278	14,194	15,183	16,259
Difference (Supply Minus Demand)	11,067	10,222	9,306	8,317	7,241
Difference (As % of Supply)	47%	43%	40%	35%	31%
Difference (As % of Demand)	89%	77%	66%	55%	45%
1. Source: District's 2005 UWMP, Page 13 2. AF/Y: acre-feet per year 3. Source: District's 2005 UWMP, Tables 12 and 13, Page 15					

9.2 City's Projected Supply and Demand Comparison

The City acquires its water from the District on the City's vested water rights, and based on the District's 2005 UWMP, the projected supply available for the City under normal, single dry year and multiple dry year conditions is equal to the City's full vested water rights. Therefore, the projected supply for the City is equal to 6,499 AF/Y for the 20-year planning horizon. Table 10 shows the projected supply and demand comparisons for the City based on the full vested water rights allocations.

Table 10 City's Projected Supply and Demand Comparison SB 610 Water Supply Assessment CUE VI LLC Marina Center Development, Eureka, California					
	2010	2015	2020	2025	2030
Supply Totals¹ (AF/Y)²	6,499	6,499	6,499	6,499	6,499
Demand Totals¹ (AF/Y)	3,971	4,174	4,387	4,611	4,847
Difference (Supply Minus Demand)	2,528	2,325	2,112	1,888	1,652
Difference (As % of Supply)	39%	36%	32%	29%	25%
Difference (As % of Demand)	64%	56%	48%	41%	34%
1. Source: City's 2005 UWMP, Table 8, Page 10					
2. AF/Y: acre-feet per year					

The City's 2005 UWMP notes that in the history of the City, the demand for water has never exceeded available supplies and there have been no deficiencies in water supply for the City's water source. The District provides the water to the City, and estimates for the City's consumption, based on the current growth rate, indicate water purchases may increase to 4,847 AF/Y (13.3 AF/D) by the year 2030. Therefore, water purchases for the City are expected to remain below the City's current water rights through 2030.

9.3 Conclusions on Supply Reliability and Demand

Based on the supply reliability data included in the District's 2005 UWMP, it appears the District would still be able to provide sufficient supply under varying conditions including the most limiting single dry water year condition. The proposed project demand was estimated to be approximately 164 AF/Y, which would constitute an approximate 3% increase in the City's projected demand for 2030. Because both the City and the District are currently projecting water demands well below the available supplies, it can be concluded that the City's public water system will have sufficient supplies to satisfy the demands of the Project, in addition to existing and planned future uses.

10.0 Conclusions

10.1 Findings of Assured Water Supply for Project

Section 10911(c) of the Water Code states “The City or County shall determine, based on the entire record, whether projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses.” A finding can be made that there is ensured water supply for the proposed Marina Center Project based on the analysis contained in the City’s 2005 UWMP, the District’s 2005 UWMP, and this water supply assessment. This analysis concludes that the City will have sufficient water supplies to meet demand under all conditions through the 20-year planning period ending in 2030.

10.2 Future Actions

The City will need to adopt this assessment as part of the environmental review for the proposed project, including the findings described above. Section 10911(b) of the Water Code states “The City or County shall include the water assessment provided pursuant to Section 10910, and any information provided pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.”

11.0 References Cited

Baysinger Partners. (August 29, 2006). “Security National Marina Center Development, Site Concept Figure,” NR: Baysinger Partners.

City of Eureka. (2005). City of Eureka Urban Water Management Plan 2005 Update. Eureka: City of Eureka.

Dewberry, Sidney O., John S Matusik, Dewberry and Davis. (1996). *Land Development Handbook, Planning, Engineering, and Surveying*. New York:McGraw Hill.

Humboldt Bay Municipal Water District. (2005). Humboldt Bay Municipal Water District Urban Water Management Plan 2005. Eureka: Humboldt Bay Municipal Water District.

Knight, Michael, Public Works Director, City of Eureka, personal communication regarding water system model.

State of California. (NR). California Water Code. Sacramento: State of California.

---. (2002). Senate Bill 610. Sacramento: State of California.

Viessman, Warren Jr. and Mark J. Hammer. (1993). Water Supply and Pollution Control, fifth edition. New York:Harper Collins College Publishers.